



Extrusion Application Center

Application & Training Center Factsheet

Head: Alfred Zuend (Operation) and Christoph Schill (Technology)

Location: Bühler AG, Uzwil, Switzerland

Area: 735 square meters

Operational since:

Original opening of the Extrusion Application Center in 1987

Re-opening after renovation in 2015

Since 2015: Continuous additions with state-of-the-art equipment

Extrusion Application Center

The Extrusion Application Center is a multi-purpose lab where customers can conduct tests on food and animal feed, check new recipes, product shapes, and textures. Food trials include cereals, snacks, extruded breadcrumbs, reconstituted/fortified rice, flavoring, modified starch and modified flour, meat substitutes based on low and high

moisture, and other special ingredients. Tests on pet food and aqua feed for freshwater and marine species can also be run at the center. The Extrusion Application Center uses cutting-edge technology and can incorporate partner solutions.

What is unique about it?

This state-of-the-art Application & Training Center (ATC) combines more than 30 years of extrusion competence embedded in a global network of universities and food science institutes and other extrusion platforms. Together with its in-house R&D and technology, this ATC is for customers the cornerstone for future innovation.

The Extrusion Application Center can run tests employing not only individual machines, such as the extruder, but on the complete process, and thus create a factory-like situation from intake until the final product. It starts with raw material intake, grinding, and mixing and moves to dosing, extrusion, flaking, drying and toasting, cutting and crumbling.

The unique combination of the Protein Innovation Center and the Extrusion Application Center allows for the direct connection from dry- and wet-separated proteins into an extrusion system. This helps to find novel and more sustainable processing solutions from the field to the fork. Extruded products like cereals, protein crisps or flakes can be further processed into cereal bars in the Food Creation Center and coated with chocolate from Bühler's experts in the Chocolate Application Center.

Key figures:

- Approx. 80 – 90 trials per year
- Approx. 3,200 – 3,600 hours of trials per year
- Approx. 500,000 kg processed material per year
- Over 200 customers trained per year (on-site trainings and virtual trainings)

Raw materials:

At the Extrusion Application Center, different raw materials from various sources can be processed. Customers can provide their specific raw materials, or protein, concentrates, isolates, and starches processed at Bühler's Grain Innovation Center and Protein Application Center can also be used.

Raw materials include rice, maize, wheat, various pulses, oilseed expellers like from soybean, sunflower or rape seeds. Depending on the end product, other ingredients like fresh meat or chocolate, flavors, vitamins, and other ingredients can be used.

Technology solutions available:

- Main machines available include:
- Flaker
- Extruder
- Dryers
- Hammermill
- Mixer

Services:

Product and process development:

- Feasibility trial with undefined recipes
- Product development with existing recipes
- Enhanced product development with final recipe

Plant or process optimization:

- To ensure an optimum running plant and process, the Extrusion Application Center provides a unique test and application environment to demonstrate and develop process-based solutions.

Collaborate with other Application & Training Centers to provide extended end-product value streams:

Close collaboration with all food related Application & Training Centers:

- Protein Application Center: From bean to burger – the team can test the complete value chain within the same building.
- Pasta Application Center: Create traditional or gluten-free pasta as well as couscous.
- Food Creation Center: Create creative salty or sweet snacks like protein bars with cereals in it combining the competences of both application centers.
- Flavor Creation Center: Create creative salty or sweet snacks together like a granola with nuts or chocolate snips combining the competences of both application centers.
- Insect Application Center: Use lipids or the meal in pet food or aqua feed.
- Close collaboration and knowledge exchange with Protein Innovation Center in Singapore, Jiangnan University in China, the German Institute of Food Technologies (DIL), MISTA in San Francisco (US), the North Carolina Food Innovation Lab (NCFIL, US), Tropical Food Innovation Lab in Brazil and Bühler's Application & Training Centers in Minneapolis (USA) and Wuxi (China).

End-product categories:

Meat analogues (dry- and wet texturates) like plant-based chicken chunks or plant-based burgers; every kind of breakfast cereal that the customer can imagine (from chocolate field pillows to multi-grain flakes or granola); breadcrumbs; reconstituted/fortified rice; modified starch and modified flour; extruded snacks (sweet and salty in every shape or form); pet food (different kinds of kibbles and treats with and without fresh meat or also insect-based); aqua feed (every shape or form); cold-extrusion products like couscous, pasta and noodles developed in close collaboration with Bühler's Pasta Application Center.

Testing of machines and automation:

- See new Bühler machines running before buying them
- Evaluate customer's own machines in new processes, simulating the operation of the plant

Training and courses (on-site or virtual):

- Our advanced trainings and courses range from the standardized trainings modules to customer-specific trainings covering every level of knowledge and focus.



Scan to learn more from
the website

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